TECHNICAL SCHEDULE XI

FUNCTIONAL GUARANTEES OF THE PLANT
(To be completed by the Tenderer)

1 General

This document sets out the functional guarantees required to be provided by the Tenderer for assessing the performance of the Works. These guarantees shall be used by the Employer to evaluate Bidder's satisfactory performance during the Tests after Completion, and also throughout the Operation and Maintenance Period.

The Bidder shall complete the following sections and provide values for the electrical energy usage for the Works covered under the contract, based on the raw sewage flows and characteristics and effluent and sludge quality requirements as given in Section 7 (Technical Specifications) of Volume 2 (Employer's Requirements).

2 Functional Guarantees

2.1 Effluent and Sludge Quality

The Bidder guarantees that the effluent and sludge quality requirements specified in Section 7 of Volume 2 will be fully and completely met, under either actual or simulated design raw sewage flows, loadings, and characteristics, as demonstrated by the Tests after Completion. The bidder further guarantees that the specified requirements will continue to be fully and completely met throughout the Operation and Maintenance Period.

2.2 Electrical Energy Usage

The Bidder guarantees that electrical energy usage of various components of the Works will not exceed the values listed in the table below, as demonstrated by the Tests after Completion and throughout the Operation and Maintenance Period. The actual electrical energy usage shall be directly metered and compared to guaranteed numbers on a monthly basis.

Item	**Guaranteed not-to-exceed energy usage (PC_D) (kWh per Month)**
40MLD Phase-I STP Complete Works	
Total	

Note: Electrical Load List shall be provided for entire plant to arrive guaranteed power consumption, considering the minimum equipment requirements as per tender specifications.

In case the Tenderer fails to consider any of the above said factors. The Employer has the sole authority to do necessary corrections and consider revised figures for NPV Calculation during Evaluation of the Bid.

2.3 Energy Consumption during Operation and Maintenance Period

During operation and maintenance period the below formula will be applied for arriving the guaranteed power consumption based on actual flow and actual inlet sewage characteristics.

Symbol Definitions

The following symbol definitions shall apply for the subsequent clauses of this schedule:

PC_D = Guaranteed power consumption under design conditions for complete works, (kWh per day)

PC_A = Guaranteed not-to-exceed power usage under actual daily operating conditions for complete works, (kWh per day)

PG_D = Guaranteed power generation under design conditions for complete works, (kWh per day)

PG_A = Guaranteed not-to-exceed power generation under actual daily operating conditions for complete works, (kWh per day)

Q_{D1} = Design average influent sewage flow 5 MLD

Q_{A1} = Daily actual metered influent sewage flow for sewage treatment

Q_{D2} = Design average influent sewage flow 5 MLD

Q_{A2} = Daily actual metered influent sewage flow for sludge treatment

B_D = Design average influent sewage BOD concentration specified in bid document (mg/L)

B_A = Daily average of actual measured influent sewage BOD concentrations (mg/L)

T_D = Design average influent sewage TSS concentration specified in bid document (mg/L)

T_A = Daily average of actual measured influent sewage TSS concentrations (mg/L)

N_D = Design average influent sewage TKN concentration specified in bid document (mg/L)

N_A = Daily average of actual measured influent sewage TKN concentrations (mg/L)

V_D = Design average influent sewage VSS concentration specified in bid document (mg/L)

V_A = Daily average of actual measured influent sewage VSS concentrations (mg/L)

Guaranteed not-to-exceed power consumption under actual daily operating conditions for complete works to be calculated per formula below and result value shall be **Maximum of**

$PC_A = [0.4*PC_D]$

Or

PCA = [{PCD*(QA/QD)}*{(0.55*BA/BD)+(0.22*NA/ND)+(0.23*TA/TD)}]